



FIG. 1

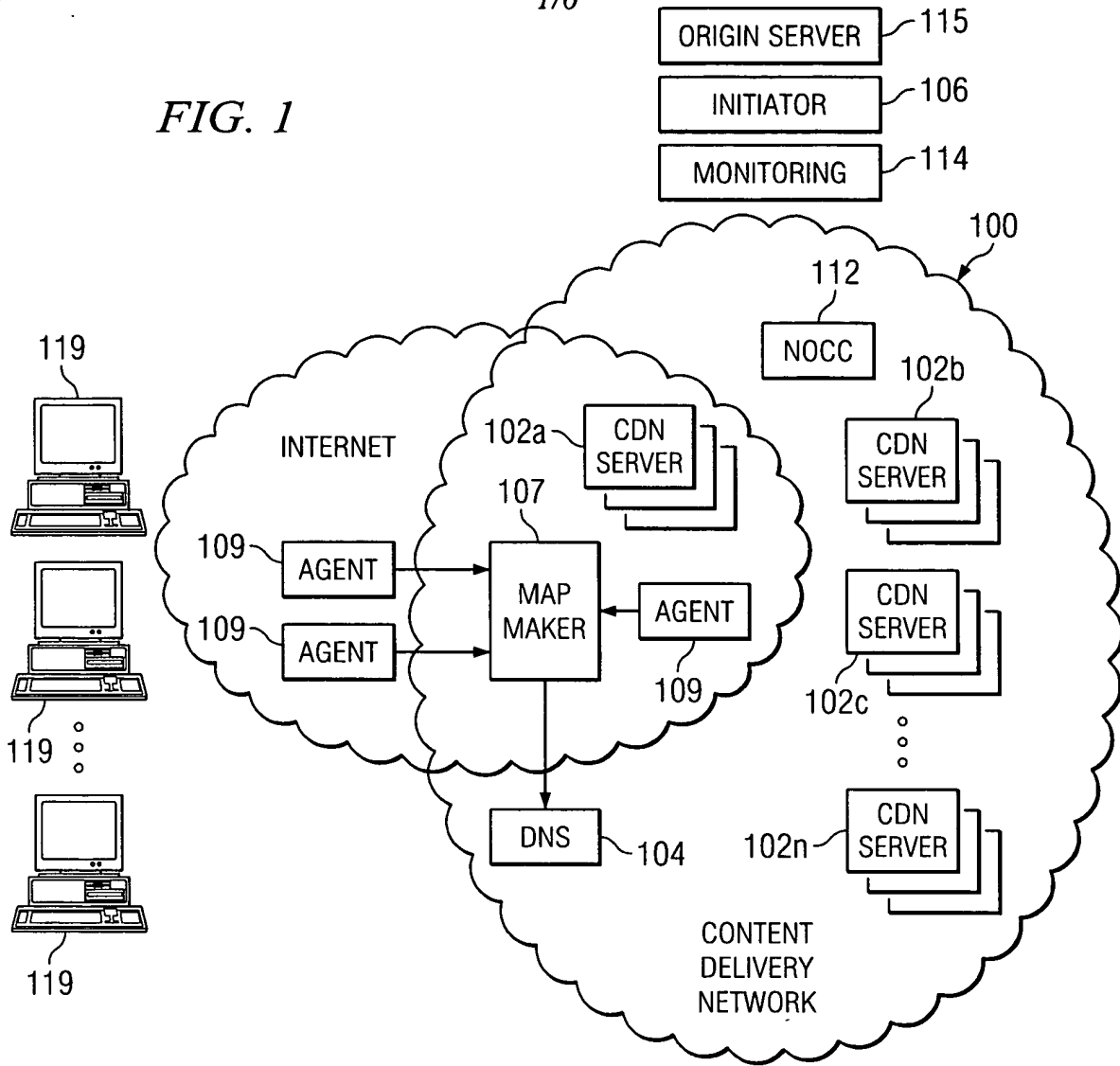


FIG. 2

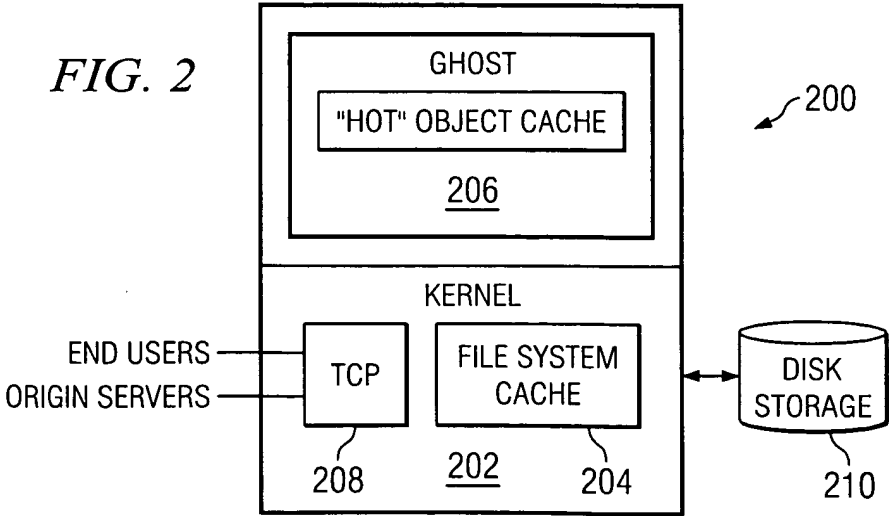
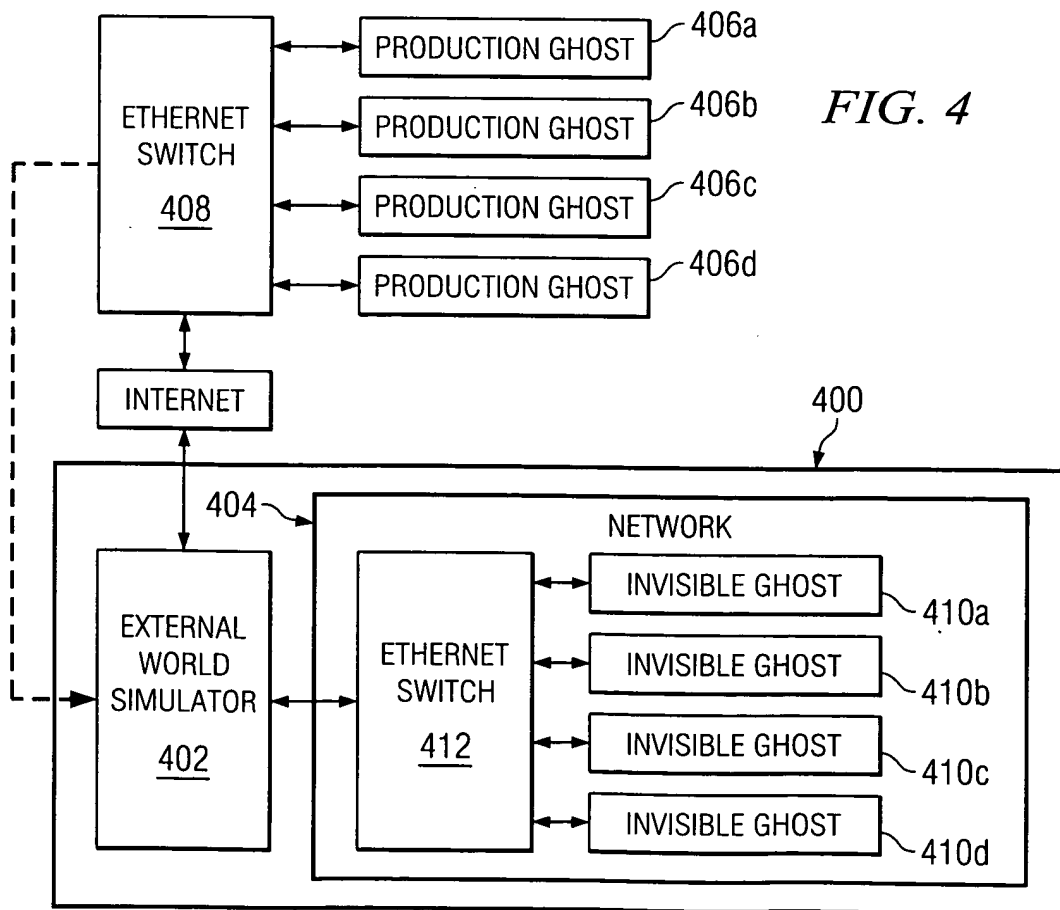
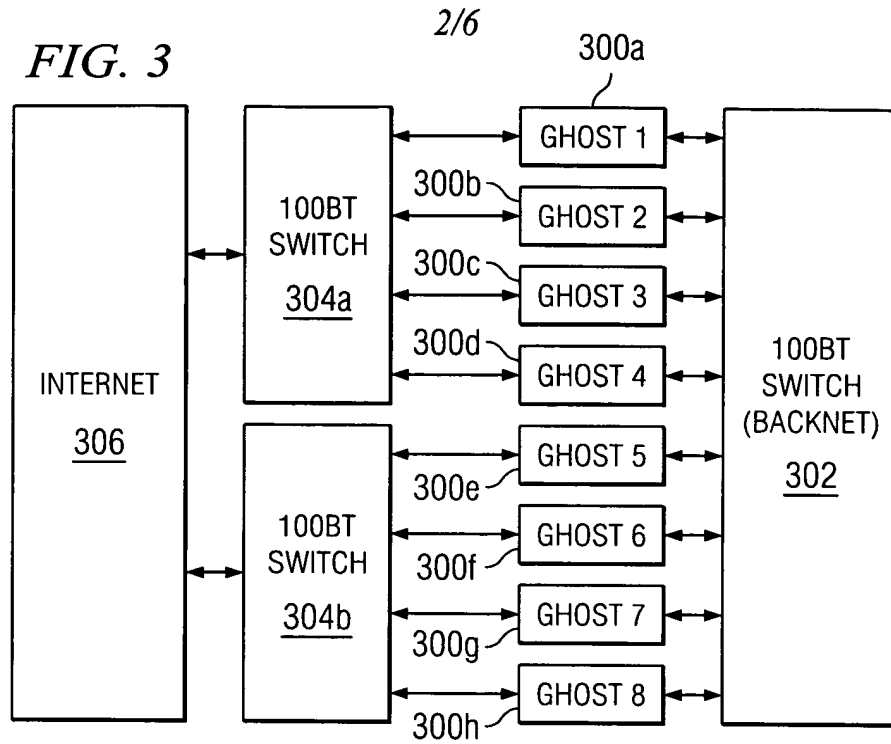
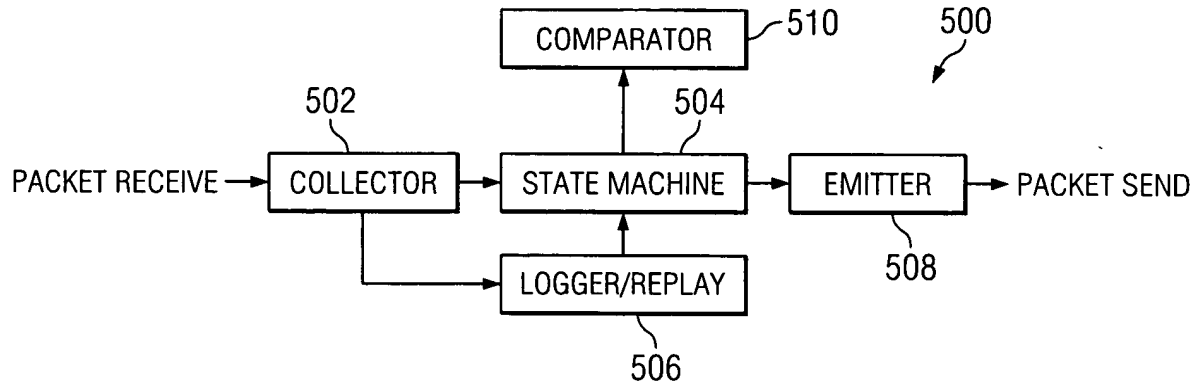
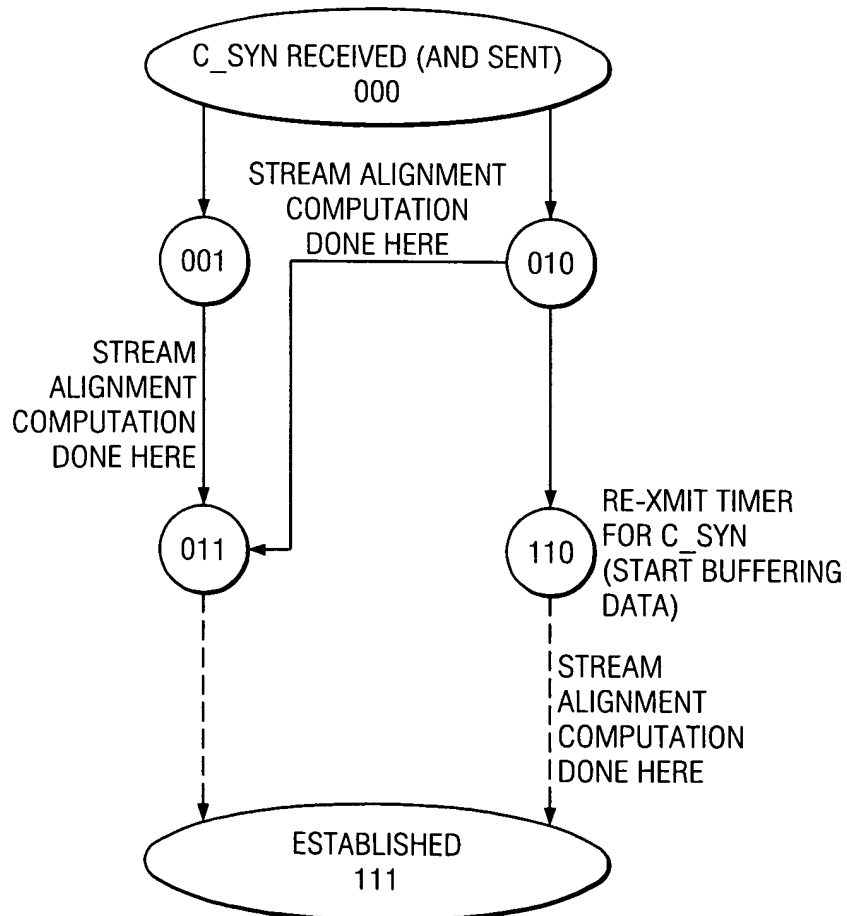
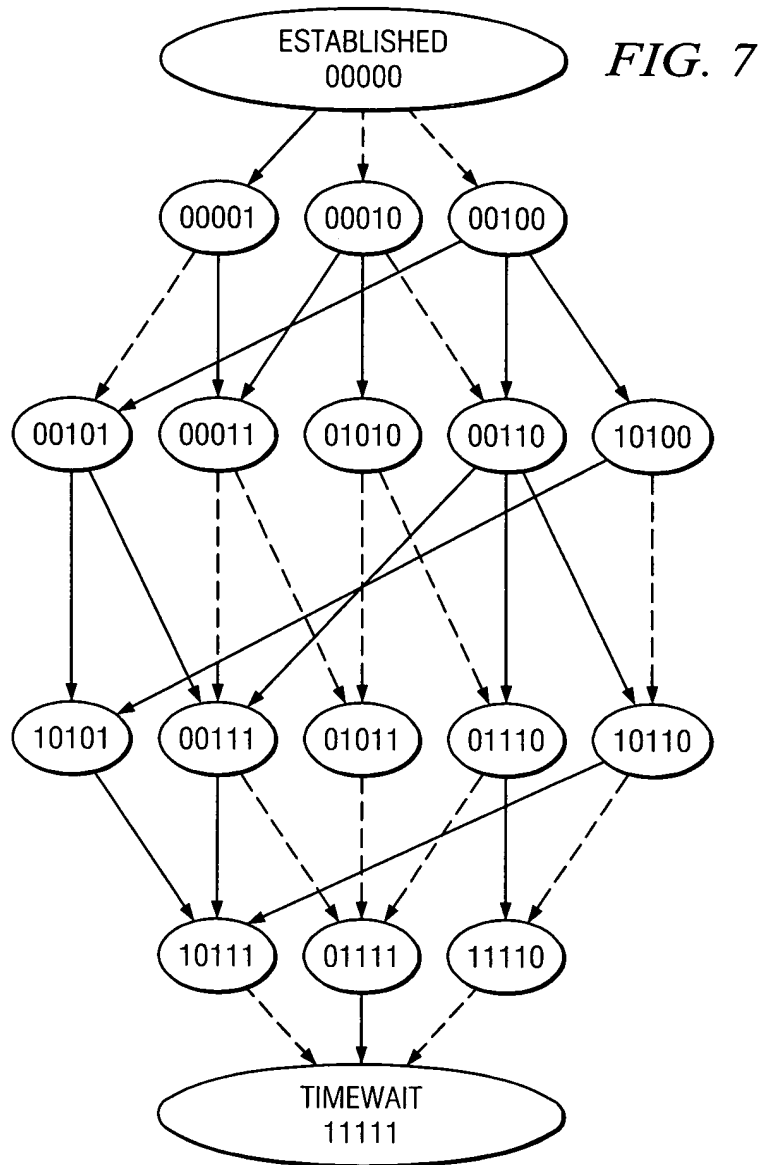


FIG. 3

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FIG. 5*FIG. 6*

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**FIG. 8**

Client-PG conversation

```

35.307723 client.2894 > PG.80: S 649812829:649812829(0) win 8192 id 37968
<mss 536>
35.307807 PG.80 > client.2894: S 2103996938:2103996938(0) ack 649812830
win 32736 id 22893 <mss 536>
35.394877 client.2894 > PG.80: . ack 1 win 8576 id 37989
35.402592 client.2894 > PG.80: P 1:405(404) ack 1 win 8576 id 37991
35.404046 PG.80 > client.2894: P 1:160(159) ack 405 win 32736 id 22902
35.404327 PG.80 > client.2894: F 160:160(0) ack 405 win 32736 id 22903
35.499080 client.2894 > PG.80: . ack 161 win 8417 id 38023
35.598546 client.2894 > PG.80: F 405:405(0) ack 161 win 8576 id 38049
35.598617 PG.80 > client.2894: . ack 406 win 32735 id 22925
  
```

FIG. 9

35.307723 client.2894 > PG.80: S 649812829:649812829(0) win 8192 id 37968
 <mss 536>
 EWS duplicates client open
 35.307864 client.2894 > IG.80: S 649812829:649812829(0) win 8192 id 37968
 <mss 536> (ews)
 35.307807 PG.80 > client.2894: S 2103996938:2103996938(0) ack 649812830
 win 32736 id 22893 <mss 536>
 Invisible Ghost responds to open
 35.308005 IG.80 > client.2894: S 1396028487:1396028487(0) ack 649812830
 win 32736 id 44202 <mss 536>

FIG. 10

35.394877 client.2894 > PG.80: . ack 1 win 8576 id 37989
 EWS duplicates client first ack, adjusting sequence numbers
 35.394940 client.2894 > IG.80: . ack 1 win 8576 id 3750 (ews)
 35.402592 client.2894 > PG.80: P 1:405(404) ack 1 win 8576 id 37991
 EWS duplicates client request
 35.402723 client.2894 > IG.80: P 1:405(404) ack 1 win 8576 id 37991 (ews)

FIG. 11

Invisible Ghost responds with 196 bytes
 35.404068 IG.80 > client.2894: P 1:197(196) ack 405 win 32736 id 44209
 Production Ghost with 159 bytes
 35.404046 PG.80 > client.2894: P 1:160(159) ack 405 win 32736 id 22902
 PG closes connection
 35.404327 PG.80 > client.2894: F 160:160(0) ack 405 win 32736 id 22903
 IG closes connection
 35.404457 IG.80 > client.2894: F 197:197(0) ack 405 win 32736 id 44210

FIG. 12

Client acknowledges data & FIN
 35.499080 client.2894 > PG.80: . ack 161 win 8417 id 38023
 EWS ack's data (rounding to packet boundary)
 35.499146 client.2894 > IG.80: . ack 197 win 8381 id 3776 (ews)
 EWS ack's FIN (blowing window open for drain)
 35.540786 client.2894 > IG.80: . ack 198 win 65533 id 3778 (ews)

FIG. 13

35.598546 client.2894 > PG.80: F 405:405(0) ack 161 win 8576 id 38049
 35.598604 client.2894 > IG.80: F 405:405(0) ack 198 win 8576 id 38049 (ews)
 35.598617 PG.80 > client.2894: . ack 406 win 32735 id 22925
 35.598754 IG.80 > client.2894: . ack 406 win 32735 id 44216

```

[temp start Wed Jan 12 04:44:14 2000 ] |
[es (35.168.66.2.1283) headers (request 1)]
  GET /7/1508/993/382b7678/www.looksmart.com/i/1s99/1s-cuts.gif HTTP/1.0
  Accept: */*
  Referer: http://www.looksmart.com/cus1/cus65300/cus65303/cus77824/cus65079/cus327765/cus327766/cus318905/cus318610/r1&
  Accept-Language: en-us
  Accept-Encoding: gzip,deflate
  User-Agent: Mozilla/4.0 (compatible; MSIE 4.01; Windows 95)
  Host: a1508.g.akamaitech.net
[pg (38.187.87.201.80) headers (1) total_bytes: 1982 body_bytes: 1735]
  HTTP/1.0 200 OK
  Date: Fri, 12 Nov 1999 01:57:01 GMT
  Server: Apache/1.3.4 (Unix)
  Last-Modified: Mon, 09 Aug 1999 22:03:59 GMT
  ETag: "u9c71.6c7.37af504f"
  Accept-Ranges: bytes
  Content-Length: 1735
  Content-Type: image/gif
  Connection: close
[ig (38.185.125.201.80) headers (1) total_bytes: 1903 body_bytes: 1656]
  HTTP/1.0 200 OK
  Date: Wed, 12 Jan 2000 02:15:14 GMT
  Server: Apache/1.3.4 (Unix)
  Last-Modified: Wed, 11 Aug 1999 20:02:14 GMT
  ETag: "7a939-673-37b1d6c6"
  Accept-Ranges: bytes
  Content-Length: 1656
  Content-Type: images/gif
  Connection: close
[msg] Differing response lengths
(temp end) |

```

FIG. 14